

REMARKS

This paper is being provided in response to the January 9, 2003 Office Action for the above-referenced application. In this response, Applicants have cancelled claims 20-31 and amended claims 1-3 and 8 to clarify that which Applicants deem to be the invention. Applicants respectfully submit that the modifications to the claims are all supported by the originally filed application.

The rejection of Claims 1-2 and 8-19 under 35 U.S.C. 102(e) as being anticipated by Yamamoto et al. (U.S. Patent No. 6,408,370) is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that Claims 1-2 and 8-19, as amended herein, are patentable over Yamamoto, for reasons set forth in detail below.

Claim 1, as amended herein, recites a data storage system that includes a first disk drive unit, a second disk drive unit coupled to the first disk drive unit by a bus, a main cache memory, coupled to the bus, that caches data from at least one of the first disk drive unit and the second disk drive unit, and a secondary memory separate from the main cache memory and provided as part of the first disk drive unit, wherein the secondary memory has at least two sections, a first section used by the first disk drive unit to facilitate disk accesses and a second section used to cache data provided to the second section from the second disk drive unit.

Claim 2, as amended herein, recites a disk drive unit that includes an interface that communicates data to and from the disk drive unit, a first disk platter that stores data, and a controller coupled to the interface and the first disk platter. The controller is recited as providing and accepting data signals that control the disk drive unit and communicate data therewith, where the controller includes a memory having a first portion that is useable as cache for data that is stored on said first disk platter and having a second portion that is useable as cache for data that is stored on a second disk platter that is separate from the disk drive unit, where the second portion is provided with data from said second disk platter.

Claim 8, as amended herein, recites a data storage system that includes a first disk drive including a section of onboard memory associated with the first disk drive and including an interface that handles data communication to and from the first disk drive, a second disk drive that provides data to the first disk drive via the interface, and memory that caches data of the data storage system. The memory is recited as including the section of onboard memory associated with the first disk drive where the section includes a portion of data cached from at least the second disk drive and where data from the second disk drive is provided to the onboard memory. Claims 9-19 depend from claim 8.

Yamamoto discloses dual writing of data through the effect of two controllers. (Col. 1, Lines 6-7). Yamamoto's Figure 1 illustrates a general configuration that includes a primary controller 104 connected to one or more disk units 105 and a secondary controller 109 connected to one or more disk units 105. The primary controller includes

a control memory 107 and a cache memory 108 that are non-volatized. A processor 100 provides data to the primary controller 104. The primary controller 104 provides a function to transfer data to the secondary controller 109. (Col. 1, Lines 56-58). The write data managing information 113 corresponding to the write data record 112 is created on the control memory 107. (Col. 3, Line 65-Col. 4, Line 5). At first, the received write data 112 is stored in the cache memory 108. The primary controller then transmits the write data to the secondary controller 109 which subsequently transfers the data to one of the disk units 105 coupled thereto.

Yamamoto generally discloses a system where data flows from the processor 100 to the primary controller 104 (and memory units thereof 107, 108) and from the primary controller 104 to the secondary controller 109. The controllers 104, 109 write data to the disk units 105 coupled thereto. However, even if it is true that one or both of the memories 107, 108 contain data that may be written from the memories 107, 108 to the disk units 105 connected to either the primary controller 104 or the secondary controller 109, it is still the case that no data from a disk unit 105 coupled to the secondary controller 109 is ever provided to a memory of the primary controller 104 or vice versa.

Applicants' Claim 1, is neither disclosed nor suggested by the Yamamoto, in that Yamamoto neither discloses nor suggests the recited secondary memory separate from the main cache memory and provided as part of the first disk drive unit where the secondary memory has at least two sections, a first section used by the first disk drive unit to facilitate disk accesses and a second section used to cache data provided to the

second section from the second disk drive unit, as set forth in Applicants' Claim 1.

Yamamoto discloses data from the processor 100 written to at least one of the memories 107, 108, but does not show, teach, or suggest any data from one of the disk drive units 105 coupled to one of the controllers 104, 109 being provided from the disk drive unit 105 to the memory of the other one of the controllers 104, 109. In contrast, this feature is specifically recited in claim 1, as amended herein.

For reasons similar to those set forth above regarding Claim 1, Applicants' Claim 2 is neither disclosed nor suggested by Yamamoto in that Yamamoto neither discloses nor suggests the recited controller that includes a memory having a first portion that is useable as cache for data that is stored on the first disk platter and having a second portion that is useable as cache for data that is stored on a second disk platter that is separate from the disk drive unit, where said second portion is provided with data from the second disk platter, as set forth in Applicants' Claim 2. As set forth above, in Yamamoto, there is no disclosure to provide data from a disk drive unit 105 couple to one of the controllers 104, 109 to the memory of the other one of the controllers 104, 109.

For reasons similar to those set forth above regarding Claim 1, Applicants' Claim 8 is neither disclosed nor suggested by Yamamoto in that Yamamoto neither discloses nor suggests the recited memory that includes the section of onboard memory associated with the first disk drive where the section includes a portion of data cached from at least the second disk drive and where data from the second disk drive is provided to the onboard memory, as set forth in Applicants' Claim 8. As set forth above, in Yamamoto,

there is no disclosure to provide data from a disk drive unit 105 couple to one of the controllers 104, 109 to the memory of the other one of the controllers 104, 109.

In view of the foregoing, Applicants respectfully submits that Yamamoto neither discloses, teaches, or suggests Applicants' Claims 1-2 and 8-19 and requests that the rejection be reconsidered and withdrawn.

The rejection of Claims 3-7 and 20-31 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto is hereby traversed and reconsideration thereof is respectfully requested. Claims 20-31 have been cancelled herein.

Applicants' Claim 3, as amended herein, recites a data storage device that includes a first section of onboard volatile memory containing data for the storage device and a second section of onboard volatile memory associated with the data storage device and used as a cache including data cached from at least one other data storage device, where the second section of onboard volatile memory is provided with data from the at least one other data storage device

Yamamoto is summarized above.

For reasons similar to those set forth above regarding independent Claim 1, Applicants' Claim 3 is neither disclosed nor suggested by the Yamamoto in that the Yamamoto neither discloses nor suggests the recited second section of onboard volatile

memory associated with the data storage device and used as a cache that includes data cached from at least one other data storage device, where the second section of onboard volatile memory is provided with data from the at least one other data storage device, as set forth in Applicants' Claim 3.

In view of the foregoing, Applicants respectfully submits that Yamamoto neither discloses, teaches, or suggests Applicants' Claims 3-7 and thus applicants respectfully request that the rejection be reconsidered and withdrawn.

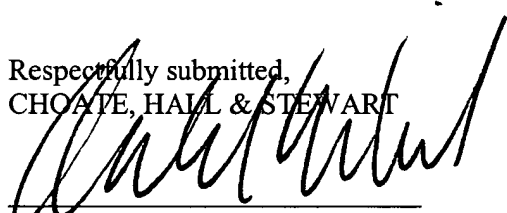
Based on the above, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-248-4038.

February 20, 2003

Date

Choate, Hall & Stewart
Patent Group
Exchange Place
53 State Street
Boston, MA 02109-2804

Respectfully submitted,
CHOATE, HALL & STEWART


Donald W. Muirhead
Reg. No. 33,978

B1 1. (Once Amended) A data storage system, comprising:

a first disk drive unit;

a second disk drive unit, coupled to the first disk drive unit by a bus;

a main cache memory, coupled to the bus, that caches data from at least one of the first disk drive unit and the second disk drive unit; and

a secondary memory separate from the main cache memory and provided as part of the first disk drive unit, wherein the secondary memory has at least two sections, a first section used by the first disk drive unit to facilitate disk accesses and a second section used to cache data provided to the second section from the second disk drive unit.

2. (Once Amended) A disk drive unit, comprising:

an interface that communicates data to and from the disk drive unit;

a first disk platter that stores data; and

a controller coupled to said interface and said first disk platter, the controller providing and accepting data signals that control the disk drive unit and communicate data therewith, wherein said controller includes a memory having a first portion that is useable as cache for data that is stored on said first disk platter and having a second portion that is useable as cache for data that is stored on a second disk platter that is separate from the disk drive unit, wherein said second portion is provided with data from said second disk platter.

B1 3. (Once Amended) A data storage device comprising:

a first section of onboard volatile memory containing data for the storage device;
and

a second section of onboard volatile memory associated with the data storage device and used as a cache including data cached from at least one other data storage device, wherein the second section of onboard volatile memory is provided with data from the at least one other data storage device.

B2 8. (Once Amended) A data storage system comprising:

a first disk drive including a section of onboard memory associated with the first disk drive and including an interface that handles data communication to and from the first disk drive;

a second disk drive that provides data to the first disk drive via the interface; and
memory that caches data of the data storage system, said memory including said section of onboard memory associated with said first disk drive wherein said section includes a portion of data cached from at least said second disk drive and wherein data from said second disk drive is provided to the onboard memory.
